New College Environmental Studies Program

I. Introduction

The community that represents Sarasota and its vicinity is justifiably concerned about the quality of its environment. This concern was recently expressed in a report presented by the Community Goals Council:

"We now anticipate that we are on the threshold of developmental changes which will make certain environmental changes almost inevitable. Already we can see that the natural attributes of our location are being changed and that the changes may have an adverse effect on that combination of circumstances which make the community unique."

New College shared the community's concern about the region's environmental quality and responded by announcing, in 1972, the formation of an Environmental Studies Program (ESP). At the same time the Board of Trustees of the College selected a Citizens' Advisory Committee (CAC) whose initial function would be to assist the College in the planning and development of the ESP. It was felt that the ESP could become the focal point of environmental operations in this region because of its:

(1) unique relationship with the community;

(2) the avilability of human and material resources of the College;

(3) independence from control or influence by vested interest groups.

II. Community Involvement

The success of the ESP depends, to a great degree, upon the "real" participation and involvement of the Community. Thus far, individuals and organizations concerned with the area's environment problems have enthusiastically supported the Program. This is particularly encouraging since the Program is in its embryonic stages of development. We fully expect this Community support to increase substantially as the research component of the ESP evolves during this developmental period. In addition, the CAC, which represents diverse aspects of the Community, has shown itself to be an active and

influential group in assisting the Program in its planning stages. This unique relationship (between College and Community) was only possible because of the flexible educational philosophy of New College and a sincere interest on the part of the Community to understand and solve the region's environmental problems.

The CAC represents an eclectic group of intelligent, concerned and independent individuals that will perform a liason function between the Program scientists and the general public. The CAC will, in addition to serving in an advisory capacity, also serve as agents for support and, ultimately, as transmitters of the data accumulated to the appropriate agencies, who may in turn be able to initiate and carry out specific programs.

The CAC published its initial Statement of Objectives in April, 1972, and it included the following:

1. Determine and continually update an order of priority for studies in the field of environment.
2. Act as the agency for making the results of studies available to all interested parties.
3. Seek to set in motion a process for developing, collating and disseminating factual information from all sources which can be of use in public, private and corporation environmental decision making. (Note: This is meant in the broadest possible sense to include, among others, conservationists, developers, planners (private or government), financial institutions and scientific bodies.)
4. Uncover sources of funds to finance research.
5. Establish a human resources bank which the Committee and New College staff may draw upon as may be required.

Although the Program is in its formative stages of development, it has been extremely effective in implementing some of the objectives outlined above. This can be illustrated by a number of specific examples.

Recently the CAC completed a questionnaire that required a listing, in order of priority, of those problems affecting the environment of the Sarasota-Manattee County area.

The Committee concluded that the following general areas required study and resolution (order of priority from top to bottom).

1. Water Pollution and Estuarine Water Quality
2. Population Density
3. Water Management and Supply
4. Advanced Sewage Disposal
5. Air Pollution
6. Advanced Solid Waste Disposal
7. The Aesthetic Environment
8. Where are Pollutants Coming From?
9. Preservation of Natural Areas and Resources
10. Problems of the Uplands, Drainage, Usage, etc.
11. Definition of Environmentally Critical Areas
12. Mechanics of Stimulating Public Support for Environmental Action.

The ESP responded to the community's priorities by funding a study in the area of water pollution and estuarine water quality. More specifically this research project was concerned with the problem of whether or not it is ecologically healthy for developers to create canals in order to provide the public with waterfront housing. A biologist in the College's Natural Science Division is director of the project. He proposed to establish a survey of seawalled finger canals and "natural" canals to discover what changes occur with age. Students from the College are assisting in the collection of data on the hydrography, benthos, sedimentation, phytoplankton, oxygen content, salinity, depth and circulation patterns.

An interim progress report demonstrated that much of the data had been collected and analyzed and that a final report would be forthcoming in the near future.

Significant progress has also been made in an attempt to establish a human resources bank. The Human Resources Committee of the CAC recently completed a comprehensive progress report listing human resources in the region. This excellent report lists national, state and local public agencies as well as private organizations that can serve as resources for specific environmental concerns of the Sarasota-Manattee Community.

III. New College Involvement

The ESP is a part of the College and operates from the campus. The administrative and organizational relationship of the Program to other elements of the College is outlined below.

I. Program Responsibility and Supervision:

1) The ultimate responsibility for the ESP rests with the Board of Trustees of the College.

2) The responsibility for the relations of the ESP with the community at large rests with the Citizens Advisory Committee.

3) The responsibility of carrying on the activities of the ESP rests with the Director.

4) The ultimate responsibility for coordinating the internal relations of the ESP with other elements of the College rests with the President or the Provost as his delegate. Some of the details of this responsibility are spelled out below.

II. Budget Control and Allocations:

1) The ESP budget shall be separately accounted for by the Business Office. Operating control of the budget shall be vested in the Director of the ESP, to the extent delegated by the President (or Provost).

2) The ESP shall pay an overhead cost to the College, on a basis to be worked out by the Administration and to be periodically reviewed. The principle of these arrangements is that the ESP is to be funded through contributions made to the College for the Program, except as may be necessary in the start-up period.

3) In the event of a regular faculty member's participation in the ESP, that part of his salary and benefits proportional to the time spent in the ESP will be transferred to the College budget by the Program. The allocation of transfers will be made at the discretion of a committee of the President (or the Provost) and the three Division Chairmen.

III. Personnel Appointments and Status:

1) The ESP Director shall appoint personnel to the Program with the consent of the President (or the Provost). Such appointees shall not have faculty status except as they may be appointed Consultants through the regular processes of the faculty. As Consultants, Program staff shall have the usual right to supervise work for academic credit and to write evaluations (subject to the limitation in IV. 1) below), but they may not sponsor contracts.

2) The ESP Director shall be nominated for appointment to the faculty through the procedures to be recommended to the faculty by the Faculty Status Committee. If appointed, he shall have the full privileges of a faculty member except for the right to sponsor contracts. He shall, as a faculty member, be subject to annual retention and promotion decisions in a manner to be worked out by the Faculty Status Committee and to be approved by the faculty. He shall not be eligible for tenure. His position as ESP Director is to be held in accordance with contract provisions and at the discretion of the President.

3) When the ESP desires the services of a member of the faculty, the Director shall inform the appropriate Division, which shall vote to approve or disapprove this allocation of faculty time. The consent of the President (or Provost) shall also be required in such cases.

IV. Academic Status of ESP Activities:

1) Prior to the formulation of the course offerings for each academic term, the Program Director shall furnish to the Division in which such work would be appropriate, lists of the ESP activities in which students may participate in that term. The Divisions shall determine which of these activities are to be accepted for academic credit, and the accepted activities are to be listed in the course offerings for that term. In cases in which it is difficult to choose the appropriate Division, the Provost shall assign the review of activities to a Division.

2) As stated in III.1) above, work done in the ESP may be evaluated for academic credit only when it is done under the supervision of a staff member who has been appointed to Consultant status, or of a regular faculty member who is working in the ESP.

3) Regular faculty members who are working in the ESP may not evaluate for academic credit any work done by a student in the ESP except for those activities designated by the appropriate Divisions.

V. Student Participation in the ESP:

1) The Director shall select students to participate in the Program. He should consult the Divisions as appropriate for their recommendations. No student may participate for academic credit without the consent of his contract sponsor.

IV. The Environmental Studies Program:

The impetus for human settlement in Southwest Florida lies in the environmental conditions associated with its coastal areas. Miles of Gulf and bayfront shoreline and mild year-round temperatures have attracted many individuals from northern cities who have found the natural amenities of this area among the most desirable in the country. The result of this migration has been extensive development of waterfront property to accommodate residential dwellings and gross alteration of the marine environment in order to facilitate navigation, improve beach conditions, and provide highway linkage to the barrier islands. In addition, current pressures to proceed with residential development in the uplands region may exacerbate the water, sewer, aesthetic, etc. problems already present in this area.

These factors, as well as many others, have been responsible for the formation of many conservation and development oriented groups with their particular vested interests. At countless public hearings along this coast, these groups have brought in "experts" in a variety of disciplines, hoping thereby to provide local governmental bodies with sufficient factual information to justify a ruling that will be consistent with their particular goals and objectives. These individuals have often been highly qualified and have held responsible positions with academic institutions, but their expert testimony has, with very few exceptions, been based upon general concepts and overall research in environmental matters rather than upon a specific complex of research oriented to the unique juncture of uplands, lowlands and sea in Southwest Florida. Consequently, not only has the testimony been weakened by too many qualifying words and too few facts, but the other parties at interest have been able to induce other "experts" to give opposing testimony of an equivalent plausibility.

There is, therefore, (1) the need for an institution beyond the reach of political and commercial influence, involved in continuing objective factual research on the effects of man upon his physical and social environment. (2) It is imperative that the data obtained be presented in a format that is easily comprehended by the community so that they, in turn, can influence, in a rational manner, the political decision-making process.

New College is an independent coeducational college, with highly qualified students and a superb faculty. The College has productive natural science, humanities and social science divisions which include laboratories and equipment adequate for sophisticated research, and a well-established library facility. New College, located as it is in Sarasota, shares the same ecological concerns as the community, and it tends to attract students and faculty who are committed to programs of teaching and study which have a potential for improving the quality of life for Man.

The ESP, as an integral part of the College, would assume the function of a coordinating research center. It would be a Program that would:

1) Develop the capability to design and implement research programs in the environmental sciences as well as collect and analyze pre-existing data.

2) Conduct and coordinate interdisciplinary programs in environmental studies.

3) Provide educational and research opportunities for students and the community.

4) Disseminate research results to the community through the CAC.

An interdisciplinary or "systems" approach must be employed if we are to adequately cope with the many and diverse environmental problems affecting this geographical region. In order to understand the complex natural, physical and social interrelationships in our ecosystem, it will become necessary to integrate the skills and expertise of individuals and organizations from many disciplines. In order to be effective, the ESP must develop its own professional staff and receive assistance from the Community and the College's students and faculty.

Dr. Erik Rifkin, an ecologist-administrator, was hired as a consultant to coordinate the program and will become its full-time Director on or before April 1, 1973. Dr.

Rifkin, who holds a Ph.D. in marine zoology from the University of Hawaii, has directed an environmental studies program at Antioch College and participated in environmental planning of the new town of Columbia, Maryland. He is especially interested in the integration of college environmental programs with community interests. Dr. Rifkin and New College have arranged for faculty and student participation in the Program. A faculty member has already been hired half-time by the Program, and a student was given a research fellowship.

We have already begun coordinating our efforts with other groups in the area, both public and private. In this way we have become aware of the professional expertise needed to understand many of the environmental problems with which we shall deal, and of the regional community's environmental goals and objectives which must be respected as we begin developing our professional staff.

One of our major aims is to identify ecosystems within the region which would be most compatible with development, those which would benefit most from conservation measures, and those which ideally should be preserved in an untouched, natural state. By making available this classification, and the criteria on which it is based, we hope to bring the regional community to a higher level of environmental awareness and focus efforts to protect the natural base on which the qualify of life in Sarasota and Southwest Florida so highly depends.

We shall deal with a wide range of other matters as well, including the ecological and economic data needed to understand problems related to air and water quality, sewage, tree preservation, etc. Our role, as we view it, is to identify problems and offer a range of potential solutions, and to provide information to the regional community so that appropriate decisions may be made by citizens and politicians in an informed, rational manner.

One of the most exciting and effective approaches to this problem is the development of easily comprehensible environmental impact statements. If prepared properly, these impact statements can graphically present the appropriate economic and ecological factors

involved in specific environmental problems. The development and use of such statements by the College and Community respectively can be an extremely effective tool in the political and value decision-making process as they relate to environmental concerns (see enclosed proposal to National Science Foundation, "Development of an Integrated Environmental Impact Statement Methodology for Dredge and Fill Operations").

At the present time federal (as well as private) agencies are in the process of developing a satisfactory methodology that would enable them to adequately comply with Section 102 (2)(c) of the National Environmental Policy Act (NEPA) (1970). Specifically, Section 102 (2)(c) of NEPA requires recognition of the following:

(1) The environmental impact of the proposed action.

(2) Any avoidable adverse effects.

(3) The relationship of short term uses and long term productivity.

(4) Any irreversible and irretrievable commitments of resources.

There is general agreement that NEPA's instructions for preparing an impact report are apparently not specific enough to insure that an agency will fully examine the environmental effects of the projects it plans or reviews.

In addition, Section 102 (2)(c) requires an environmental impact statement for "major Federal action significantly affecting the quality of human life". The difficulty in interpreting this statement was noted by the Council on Environmental Quality in its Third Annual Report:

> Both terms, "major" and "significant", are relative, calling for a reasonable exercise of judgment in light of the NEPA policy. Because the Section 102 (2)(c) requirement is addressed to the agency which must initially decide the applicability of the terms in light of its knowledge of the nature and effects of its programs.

In its discussion of the evolving impact statement process, CEQ places its emphasis on the legal factors and considerations.

The report does not outline a specific methodology for impact statement preparation, but states:

> The Council is always available to consult with agencies regarding particular programs and actions. However, the great diversity of Federal activities subject to the 102 process makes it impossible for the guidelines to do more than elaborate in general terms upon the statutory language.

The apparent absence of a definitive, quantifiable methodology for the preparation of Environmental Impact Statements has at times naturally resulted in ambiguous, and in some cases, useless, final impact reports. Each agency must therefore develop a system that will effectively relate large numbers of proposed actions and environmental factors and place value judgments on impacts which are difficult to quantify.

Because of its unique situation, the ESP could play a significant role in the development of quantifiable matrices that would serve as an integral part of the process of environmental impact statement preparation. These matrices would serve as a guide to the process of the environmental assessment which would enable the community to determine quickly what are significant environmental impacts and their relative importance. Each matrix would relate to a specific content area. The areas can be more appropriately defined after consultation with the appropriate Federal agencies and Regional Planning Councils in order to make use of existing base-line environmental data as well as analytical skills.

In the preparation of environmental impact statements which incorporate matrices as an integral component, a procedure similar to the one outlined by the USGS (A Procedure for Evaluating Environmental Impact) should be followed. It is necessary to consider certain factors prior to evaluating the environmental impact of an action. These factors are:

1) A statement of the major objective sought by the proposed project.
2) Technological possibilities.
3) Actions proposed for achieving the stated objectives.
4) Report which details characteristics and conditions of the existing environment prior to the proposed action.
5) Final engineering proposal.

6) Identification of impact.

7) Assessment of impact.

8) Recommendations.

Most, if not all, of the above outlined steps are self-explanatory and would logically be incorporated in any adequate environmental impact statement methodology. Unfortunately, all of these steps are not yet integrated into impact statement methodology at this stage of its development.

For example, reports which detail characteristics and conditions of the existing environment (Step 4) are difficult and sometimes impossible to obtain, no less integrate into an impact statement. It is clear, however, that if this information is not used, we are then producing a report that discusses an environmental impact on a set of unknown conditions.

This base-line ecological data can be obtained from Regional Planning Councils and Federal agencies such as NOAA, EPA, SCS, etc. Although much of this data is available at the present time, it is not yet being utilized.

Content areas, or conceptual frameworks, should be graphically presented as a set of matrices. To be most effective, each matrix should focus on one type of project. However, if this is not possible, a general matrix could be prepared as a first step and the analyzed data could then be incorporated into specific impact networks at a future date.

Although a number of Federal and private agencies are said to be improving their environmental impact statement design, to date there are very few matrices available. Of the few matrices actually being used, the degree of content specificity varies a great deal. Examples of general and specific matrices are briefly discussed below.

The United States Geological Survey has published a general matrix (enclosed) to be used during the preparation of environmental impact statements by Federal agencies. The horizontal axis of the matrix lists the proposed actions which may cause environmental impact. These are divided into eleven areas (resource extraction, land alteration, etc.)

which are in turn once more sub-divided. The vertical axis lists the existing characteristics and conditions of the environment. These are divided into five major areas (earth, water, flora, etc.) which are also sub-divided into the appropriate headings. The Federal agency then identifies all actions (horizontal axis) that are part of the proposed project and indicates the magnitude and importance of that action to the existing characteristics and conditions of the environment (range from 1-10; i.e. lowest to highest). Although this has proven to be a useful matrix, the USGS format can only indicate that a relationship exists between the condition of the environment and a proposed action. It does not indicate the nature of the relationship. Since this would be extremely useful, a matrix that does indicate the nature of the relationship should be developed.

An impact network or matrix that approaches this goal is the California Comprehensive Ocean Area Planning Program (CCOAPP). The CCOAPP group of matrices are cause-condition-effect statements that facilitate the acquisition of quantitative information on the effects of specific environmental insults. Each matrix specifically relates to one broad content area and coordinates uses, causal factors, the possible adverse impact (initial and consequent conditions, effect) corrective action and references index. This is a good model to use as a base for developing matrices specifically oriented to the needs of the Southwest Florida region. It could be substantially improved, however, if the USGS list of existing characteristics and conditions of the environment was correlated with the effect column (possible adverse impact) of this CCOAPP model. This would include the base-line ecological data that is critical for sound and substantial environmental impact statement preparation.

Only after a careful analysis of the base-line ecological data (existing characteristics and conditions of the environment) and its relationship to the terminal long-range effect of adverse impact can corrective action and/or control mechanisms be implemented. Although the implementation procedure would, of necessity, involve political decision-making, it is hoped that these data would help decision-makers toward objective, data-

based decisions. The corrective action and/or control mechanism would then determine whether the present or future use of a factor (such as a sewage treatment plant or commercial shell fishing) is more or less "important" (necessary) than the possible adverse impact it produces.

ESP has already compiled base-line ecological data which will enable it better to understand the present condition of this region's environment, and it has issued some preliminary reports on its findings (see enclosures). Work continues on several projects, including a study of what happens to water quality and life forms in canals on Siesta Key; a report on sampling programs being undertaken by Sarasota and Manatee County agencies; and a study of sensitive marine organisms which by their own distress indicate points of environmental disruption which may be traced to specific pollution sources.

ESP must take a pragmatic and applied approach toward environmental problem-solving. It would not be acceptable, or in many instances useful, to limit the perspective of this program exclusively to the academic community. One of the major objectives will be the integration of basic and applied environmental skills, the results of which could produce an understanding and solution to many of the community's ecological problems.